

REMARKS

Formalities

Entry of this after-final Amendment is requested. The amendments included herein provide for a more concise abstract, as requested by the Examiner. Further, Applicant is submitting herewith replacement figures 1A and 1B to replace the photographs 1A and 1B as also requested by the examiner.

Abstract

The abstract of the invention was objected to for allegedly failing to focus on the claimed invention. Applicant respectfully submits that the abstract as filed does, in fact, satisfy the requirements for an appropriate abstract of the invention, as set forth for example in MPEP §608.01(b). In particular, the abstract as filed includes that which is new in the art. That is, the abstract as filed includes utilizing calibrated spoken words in the measurement of speech intelligibility. However, to place the abstract of the invention in more concise language, Applicant has amended the abstract of the invention for purposes of conciseness.

Drawings & Claim Rejections Under 35 U.S.C. §112, ¶¶1 & 2

Initially, with respect to figures 1C-1E, these figures are not prior art and should not be labeled as such. These figures illustrate at least portions of a system consistent with the invention disclosed in the present application. Within MPEP §608.02(g) it is stated that a figure should be designated as "Prior Art" when "only that which is old is illustrated." Here, Figs. 1C-1E are described in regard to the present invention. (See Specification, pages 7-8). Indeed, it is stated in the specification that, for example Fig. 1C, shows a close-up of a GUI "which can be used with what is known in the art as a modified Hughson-Westlake

testing paradigm.” The content of the GUI is consistent with the present invention, however, and is not Prior Art.

Regarding figures 1A and 1B, Applicant submits herewith replacement figures 1A and 1B in block form to replace the previously filed photographs.

Further, the drawings were objected to for not explicitly showing a “calibrated spoken word”. Further, claims 1-20 are rejected under 35 U.S.C. § 112, ¶¶1 & 2 for essentially the same reason as the drawings were objected. Essentially, the grounds of rejection assert that “calibration”, as that term is used in the claims, is not enabled by the specification (see rejection under §112, ¶1) and, thus, the claimed term is indefinite because it is “unclear what is being done to achieve this desired result.” (see rejection under §112, ¶2). The drawings are objected to “because there is no figure showing a ‘calibrated spoken word.’”

As described in detail in the Amendment filed on October 18, 2005, in response to the non-final office action dated July 18, 2005, Applicant submits that a skilled artisan would understand that “calibrating” a previously recorded word, as that term is used in the present specification and claims, means that the respective sound energy of that word is set to “substantially the same sound energy” as the other recorded words, “at least as viewed against some common scale.” (See, e.g., Claim 1 and Specification, page 5, lines 18-19). It is further described that calibrating the recorded words in this manner “insures that the SRT testing measures speech reception across words having the same or similar energies.” (See, e.g., Specification, page 5, lines 20-21). Further, it is disclosed that;

two of the common scales which the inventor has used to calibrate the words are the Root Mean Squared (RMS) energies of a waveform representative of the words (e.g., a computer data file containing binary information representative of a voltage waveform produced by a microphone), and positive peak values (such positive peak values relative to a defined baseline) of waveforms

representative of the words (e.g., a computer data file containing binary information representative of a voltage waveform produced by a microphone).”
(Specification, page 5, lines 21-27).

Further, on page 9, lines 4-9 of the specification, it is disclosed that in one exemplary embodiment the “calibrated” spoken words are derived by scaling each recorded word, for example, in a succession of WAV files, “such that the RMS energy of the waveforms of the recorded words are substantially equal.” In another exemplary embodiment the “calibrated” spoken words are “achieved by a computer program running internal to the system unit” which scales each recorded word, for example, in a succession of WAV files, “such that the positive peak value of the waveforms representative of the recorded words are substantially equal.” (Page 9, lines 15-20). It is also disclosed that the individual peak-to-peak values, maximum-absolute-peak value, etc. may also be used to scale the waveforms. (Specification, page 9, lines 20-25).

Thus, one of ordinary skill in the art would know that in accordance with the disclosed exemplary embodiments of the invention, a computer data file representative of voltage waveforms produced by a microphone, such as WAV files of recorded words, are scaled in order to make the sound energy of each recorded word the same, thus “calibrating” the recorded words.

In the present application Applicant is not claiming novelty in any particular method or methods of calibrating the recorded words. It is noted that Applicants’ related copending application, Ser. No. 10/025,725, discloses and claims a particular method of calibrating audiometry stimuli. In the present application, Applicant has disclosed and claimed a novel method of determining a speech reception threshold, the method utilizing any one or more of various calibration techniques that result in the recorded spoken words having

substantially the same sound energy. Applicant respectfully submits that one of ordinary skill in the art would be able to make and use the invention claimed in view of the present application, including the specification and drawings. As already discussed, a skilled artisan would know how to perform a calibration procedure in accordance with the present invention, e.g., by scaling WAV files of the recorded words to have substantially the same sound energy.

Because a skilled artisan would know how to perform a method of determining a speech reception threshold, including a "calibration" procedure, in accordance with the claimed invention, particularly after reading the current specification, Applicant submits that the claims are enabled under 35 U.S.C. § 112, ¶1.

The grounds of rejection assert that "conflicting evidence" exists in the specification with respect to the novelty of the combination of steps that includes the disclosed and claimed calibration step. In particular, the grounds of rejection assert that the discussion on page 2, lines 9-11, of the specification, which is in reference to the prior art, would apparently motivate "one of pedestrian skill in the art of speech signal processing" to perform "some form of calibration on the words being used to ensure that loudness for each word is the same." This logic, however, contravenes the teachings of the prior art and misinterprets the discussion thereof in the present specification. In particular, on page 2 of the specification it is explained that in accordance with one type of speech reception threshold testing, a test subject is presented with a series of words played through headphones or speakers. (Specification, page 2, lines 13-16).

As discussed in the specification, beginning on page 5, the prior art techniques lead to difficulties because each recorded word may have been recorded at a different energy

level. As recognized for the first time by the inventors of the present invention, maintaining the *loudness* setting of the amplifier the same for all played back words, i.e., words recorded with different sound energies, introduces “inaccuracies into the SRT testing.” For example, leaving the amplifier level (loudness) the same for words recorded at a shouting energy level and for those recorded at a whisper energy level affects the test subject’s ability to discern between the two.

To address this issue, the inventors introduced the novel concept of calibrating the recorded words prior to being provided to the test subject. Accordingly, if the loudness level were maintained constant during a test administered in accordance with the present invention, the differences between the shouted word and the whispered word would be accounted for, i.e., by calibrating the words in the manner claimed, and the inaccuracies experienced by the prior art SI testing methods would be avoided. Without the knowledge provided to the skilled artisan by reading the present specification, the sound energies of the recorded words would not be equalized and, thus, the words would not be calibrated in the manner claimed, by a previously known method of calibration or otherwise, before presenting the calibrated words to the test subject.

On page 6 of the office action it is stated that “the specification indicates that the improvement [afforded by the invention] is not the actual performance of SRT, but the use of calibrated words to overcome deficiencies that can be solved by employing ***some new form of calibration.***” This contention in the office action highlights the fundamental misunderstanding of the invention that appears prevalent in the prosecution thus far. Specifically, as discussed at length, the claimed invention in the present application does not include a “***new*** form of calibration” at all. Instead, the claimed novelty here is the

combination of testing steps in an SRT test which include a calibration step whereby each of the at least one recorded spoken words to have substantially the same sound energy. Heretofore no SRT testing method has ever contemplated presenting to the test subject recorded words that were calibrated to have the same sound energy, e.g., the energy of a WAV file of a whispered word calibrated to have the same sound energy as a shouted word. To the contrary, prior to the present invention, testing methods would merely include adjusting the volume of the system playing the recorded words until the test subject was able to consistently recognize the words. According to this conventional method the sound energy of the presented words is not the same, that is, the words presented to the test subject are not calibrated according to the present claims.

Further, as discussed above, contrary to the Examiner's assertion at page 6 of the office action, the claimed calibration requirement does, in fact, "find sufficient disclosure under 35 U.S.C. § 112, ¶1." See, for example, the specification at pages 2, 4-6 and 9. Accordingly, in addition to obviating the rejection under 35 U.S.C. § 112, ¶1, the apparent basis for the Examiner's rejection under 35 U.S.C. § 112, ¶2, is also rendered moot. Particularly, the grounds of rejection assert that claims 1-20 are indefinite because it is unclear how to achieve the calibration step recited in the claims. As noted above, however, the specification clearly informs a skilled artisan how to carry out the claimed invention, including the calibration step. For example, as required by claim 1, the recoded words are calibrated such that they each have the same sound energy before the words are presented to the test subject.

Lastly, with respect to the drawings, for similar reasoning as set forth above with respect to the claim rejections under 35 U.S.C. §12, ¶¶1 & 2, Applicant respectfully submits

that no detailed drawing of an exemplary calibration procedure is required. The application as originally filed provides one of ordinary skill in the art all the information necessary to make and use the invention. As discussed, an exemplary drawing illustrating one of various possible calibration processes consistent with the invention is not necessary for an understanding of the invention.

Alleged New Matter

The grounds of rejection allege that the Amendment filed October 18, 2006 introduced "new matter" by adding the language, "calibrating at least one recorded spoken word by controlling each of the at least one recorded spoken words to have substantially the same sound energy." Applicant respectfully disagrees with the characterization that this language is "new matter." The specification clearly supports this language, as discussed at length above and in previous responses. Ample support for this recitation in the claims is found, for example, at page 5, line 17 through page 6, line 2; page 9, lines 15-25 of the specification as originally filed.

37 CFR 1.78(b)

The grounds of rejection allege that claims 1-4 of the present application conflict, under 37 CFR 1.78(b), with claims 1-4 of copending application no. 10/025,042. Applicant respectfully disagrees. Initially, the Examiner has failed to point out that which is in conflict with respect to these claims. Accordingly, it is requested that this objection/rejection be withdrawn or at least presented in a further office action including a detailed explanation as to how the indicated claims are in conflict.

Furthermore, Applicant points out that claims 1-4 of the present application include, *inter alia*, "measuring a speech reception threshold indicative of a sound level at which the

test subject can recognize the presented recorded spoken word or words.” In comparison, claims 1-4 of copending application ser. no. 10/025,042 include, *inter alia*, “measuring speech intelligibility indicative of a percentage of the presented at least one calibrated spoken word or words that the test subject successfully identified.” It is clear that claims 1-4 in the present application are different than claims 1-4 of copending application no. 10/025,042 and, further, the claims do not conflict with each other. For at least this reason, Applicant requests that the rejection/objection under 37 CFR 1.78(b) be withdrawn.

Rejection of Claims 1-4, 8-13, 19 and 20 Under 35 U.S.C. § 103 over Revit

The grounds of rejection assert that claims 1-4, 8-13, 19 and 20 are rendered obvious by the disclosure of Revit. In particular, it is asserted that Revit suggests calibrating at least one recorded spoken word by controlling each of the at least one recorded spoken words to have substantially the same sound energy, as expressly required by independent claims 1 and 10. The alleged support for the rejection is found in Revit’s calibration procedure 911 depicted in Fig. 9. In response, Applicant submits that the calibration disclosed in Revit is completely different than the disclosed and claimed calibration in the present application and, further, that the Revit calibration procedure does not in any way suggest the claimed calibration in claims 1 and 10 of the present application.

In particular, at paragraph [0087] Revit discloses “the gain of the corresponding audio power amplifier is then adjusted so that the sound level measured at [a particular location] matches the calibration level achieved during the recording calibration.” This method of calibration is similar to the prior art method discussed in the background section of the present application. That is, according to Revit the gain of the power amplifier driving the speaker is adjusted to achieve a predetermined level. In accordance with Revit,

interference sounds are recorded and, additionally, a target speech signal is recorded. The target speech signal is then output from a power amplifier and a loudspeaker both designated for the target speech signal and the interference noise is output on multiple power amplifiers and respective loudspeakers designated for the noise. A test subject is strategically located with respect to the various loudspeakers and the amplifier gain for the target speech signal and the interference noise signal(s) are independently manually adjusted, i.e., by manipulating respective attenuators. (See, e.g., par. [0051]-[0052]).

The apparent object of the Revit invention is to assess performance of real-world hearing and hearing aids. The loudness level, i.e., amplifier gain, for the speech signal and the interference signals are independently adjusted to simulate a real-world acoustic environment with respect to the test subject. Similar to the loudness adjustment processes described in the background section of the present application, Revit does not contemplate the calibration of individual words relative to each other, i.e., by scaling their respective sound energies to be substantially the same. For at least the above reason Revit does not teach or suggest the calibrating step recited in independent claims 1 and 10 and, thus, claims 1 and 10 and those claims dependent thereon, in particular claims 2-9 and 11-18 are not rendered obvious over Revit.

The grounds of rejection further assert that Revit either teaches or suggests measuring a speech reception threshold utilizing the at least one calibrated spoken word because Revit's "tester keeps score ... of words repeated correctly by the listener." In response Applicant submits that Revit does not teach or suggest the claimed measuring step because Revit does not teach or suggest "the at least one calibrated spoken word" as discussed above. The grounds of rejection admit that Revit fails to "explicitly teach

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'calibrated recorded spoken [words].'" (Office Action, page 12). Alternatively, it is asserted that Revit teaches recordings of "real conversations taking place in real-life environments" (par. [0099]) and that it would have been obvious to apply the calibration of the interference sounds, discussed above, to the words of the recorded conversations "because [Revit] teaches that the material he is recording may include words as portions of sentences." (Office Action, page 11). This argument simply does not follow. Just because the interference sounds and the sentences including words are both recorded does not imply that any given process applied to one is necessarily applied to the other. Specifically, just because the interference sounds are "calibrated" does not make it obvious to also "calibrate" recorded conversations.

Furthermore, even if it were obvious to calibrate the recorded sentences in Revit merely because the recorded interference sounds were calibrated, the claimed invention is still not rendered obvious because Revit fails to teach or even suggest calibrating the words by controlling each of the at least one recorded spoken words to have substantially the same sound energy. For this additional reason Revit does not render any of claims 1-4, 8-13, 19 and 20 obvious under 35 U.S.C. § 103.

Rejection of Claims 5-18 Under 35 U.S.C. § 103 over Revit in view of Taylor

Claims 5-18 are rejected under 35 U.S.C. § 103 as being unpatentable over Revit in view of Taylor. Claims 5-9 depend from claim 1 and claims 11-18 depend from claim 10. Neither Revit nor Taylor disclose the combination of steps as recited in claim 1, as discussed above and, thus, claim 1 is patentable over the proposed combination of Revit and Taylor. Accordingly, claims 5-9 are patentable at least for the same reason. Further, neither Revit nor Taylor disclose the combination of means, including the means for

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calibrating the recorded words and the means for presenting the calibrated words to the test subject, as recited in claim 10. Claim 10 is, thus, patentable over Revit and Taylor and claims 11-18 which depend from claim 10 are patentable for at least the same reason.

Rejection of Claims 8, 9 and 11-16 Under 35 U.S.C. § 103 over Engebretson

Claims 8 and 17 are rejected under 35 U.S.C. § 103 as being unpatentable over Revit in view of Taylor and Carr. Because claims 8 and 17 each depends from independent claim 1 or claim 10, which are patentable as discussed above, and because Taylor and Carr each fails to compensate for the deficiencies discussed above related to Revit, Applicant submits that claims 8 and 17 are patentable over the art of record for at least the same reasons as set forth above.

Conclusion

In view of the above amendments and remarks, entry of the present Amendment, reconsideration of the previous rejections and allowance of this application are respectfully requested. If any points remain in issue which the Examiner feels may be best resolved through a personal or telephone interview, the Examiner is kindly requested to contact the undersigned at the telephone number listed below.

Respectfully submitted,

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March 27, 2006



Modified Rhyme Test

U.S. Army Aeromedical Research Laboratory

Modified Rhyme Test (ANSI S3.2-1989)

Next

1

Count

Delete

125

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Annotated Sheet Showing Changes

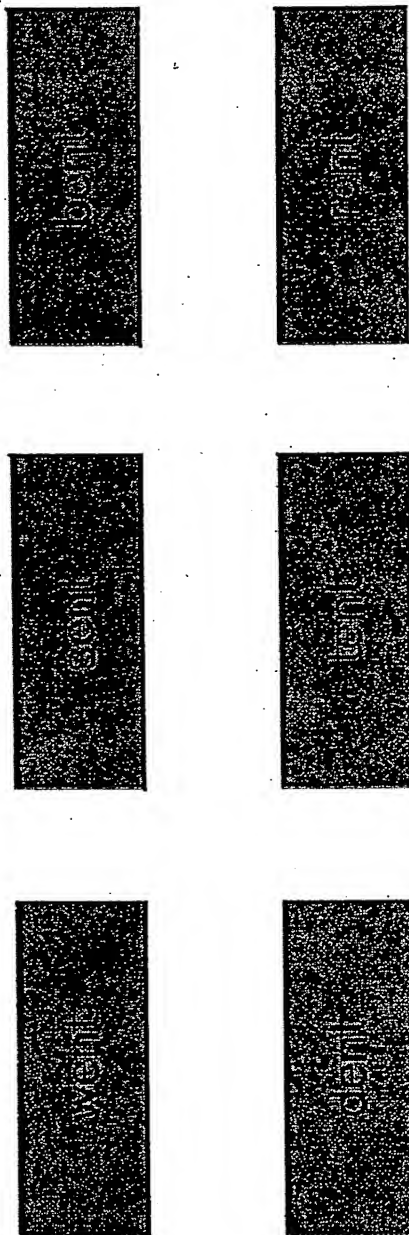


Fig. 1D
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U.S. Army Aeromedical Research Laboratory

Modified Rhyme Test (ANSI S3.2-1988) *Delete*

Attenuation Channel 1

50

Attenuation Channel 2

50

Modified Rhyme Test

First Name

First

ID Number

xxx-xx-xxxx

Experimental Conditions

C:\MTC Stimuli\Ahroon\Ahroon 50 dB

Fig. 1C

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